REMARKS

In the Office Action, the Examiner rejected the claims 1 – 25 under the second paragraph of section 112 and rejected claims 1 – 25 as obvious over Caprara et al in view of Kinoshita.

35 USC §112, 2nd ¶

The claims 1, 3 and 4 have been amended to address the second 112, second paragraph rejection to claim the structural cooperative relationship between the external resonator and the quantum well structure. Specifically, claim 1 is directed to an optically pumped surface-emitting semiconductor laser device. This laser devices comprises inter alia a radiation-generating quantum well structure as a laser gain medium which is arranged in an external resonator, and a pump radiation source for optically pumping this radiation-generating quantum well structure. The radiation-generating quantum well structure generates radiation due to the optical pump process. For laser operation, a feedback of this radiation to a laser gain medium, i.e. the radiation-generating quantum well structure is necessary. The feedback is achieved be the external resonator.

In the amended claim 1, a clear and cooperative relationship between the external resonator and the radiation-generating quantum well structure has been added by the feature that the radiation-generating quantum well structure is provided for generating radiation in the external laser resonator

Claims 3 and 4 have also been amended to address the indefiniteness.

The section 112 rejection is therefore overcome.

35 USC §103(a)

The Examiner has rejected the claims 1 – 25 as obvious when considered over the combined teachings of the Caprara et al U.S. Patent No. 5,991,318 in view of Kinoshita U.S. Patent No. 6,535,537. Specifically, the Examiner indicates that the Caprara et al. reference lacks the teaching of a common substrate and so turns to Kinoshita for a showing of a common substrate.

The Kinoshita reference issued on March 18, 2003, from a U.S. application filed on September 15, 2000. The present application relies on two priority applications in the German Patent Office, namely application 101 08 079.4 filed February 20, 2001, and application 100 26 734.3 filed May 30, 2000. The claim for priority benefits has been made

on the Declaration and Power of Attorney form and the certified copies of these two applications with the U.S. Patent and Trademark Office were filed with a submittal mailed on December 4, 2002.

The present application thus relies on a priority date prior to the filing date of the cited Kinoshita reference. Applicants assert that the subject matter of the May 30, 2000, priority application predates the Kinoshita application and so the reference should be removed as a reference against this application.

The claimed invention is distinguishable over even the combination of references cited by the Examiner.

In Caprara et al. the divergent pump radiation beam is focused by a lens on the main surface of the monolithic surface-emitting semiconductor layer structure, and impinges on the main surface under an oblique angle. The main surface is the surface which is used for coupling out the radiation generated by the surface-emitting semiconductor layer structure.

However, if the pump radiation source and the monolithic surface-emitting semiconductor layer structure are formed by semiconductor layers grown epitaxially on a common substrate, it would not be possible to pump the monolithic surface-emitting semiconductor layer structure through the main surface. Therefore, the pump arrangement shown in Caprara et al. is not suited for a monolithic integration of the pump radiation source. As such, the person of ordinary skill in the art would not seek to modify the Caprara reference to provide a monolithic integration since to do so would result in an inoperative device without making substantial, inventive changes to the structure of Caprara.

The teachings of the Caprara reference are not consistent with modification to form the optically pumped surface-emitting quantum well structure as described in the present application.

Also, the placement of a lens between the pump radiation source and surface-emitting semiconductor layer structure in order to focus the pump radiation would be extremely difficult, since the lens diameter has to be in the same order of magnitude as the layer thickness, i.e. in the range of nanometers up to few micrometers.

It should be emphasized at this point that according to claim 1 of the present application the pump radiation source and the radiation generating quantum well structure are epitaxially grown on a common substrate, and not merely placed on any common carrier.

The cited art does not teach or suggest the claimed invention, whether Caprara is considered alone or in combination with Kinoshita.

Therefore, the present invention as defined in the claims is a non-obvious improvement over the cited art.

Conclusion

Early favorable reconsideration and allowance of the present application is hereby requested.

Respectfully submitted,

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